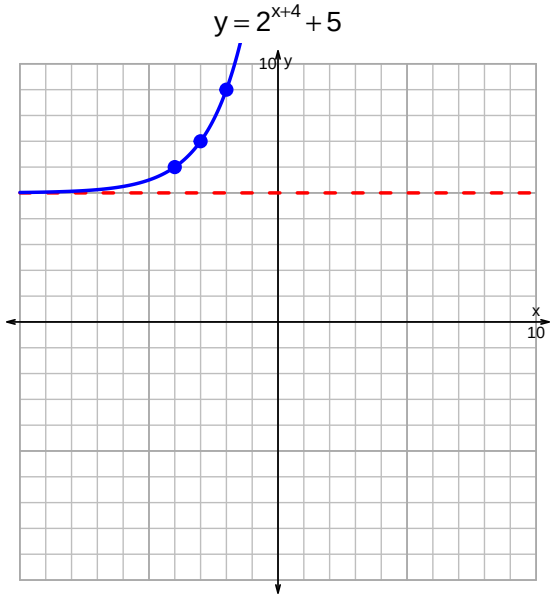
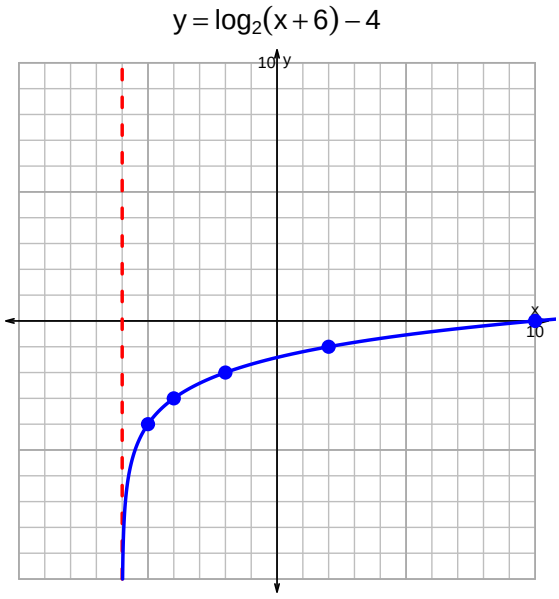
Name: Date:

S18QUIZ: EXP LOG (SLTN v259)

1. Graph $y = 2^{x+4} + 5$ and $y = \log_2(x+6) - 4$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-19 = \left(\frac{-3}{7}\right) \cdot 2^{5t/4}$$

Divide both sides by $\frac{-3}{7}$.

$$\frac{19 \cdot 7}{3} = 2^{5t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19 \cdot 7}{3}\right) = \frac{5t}{4}$$

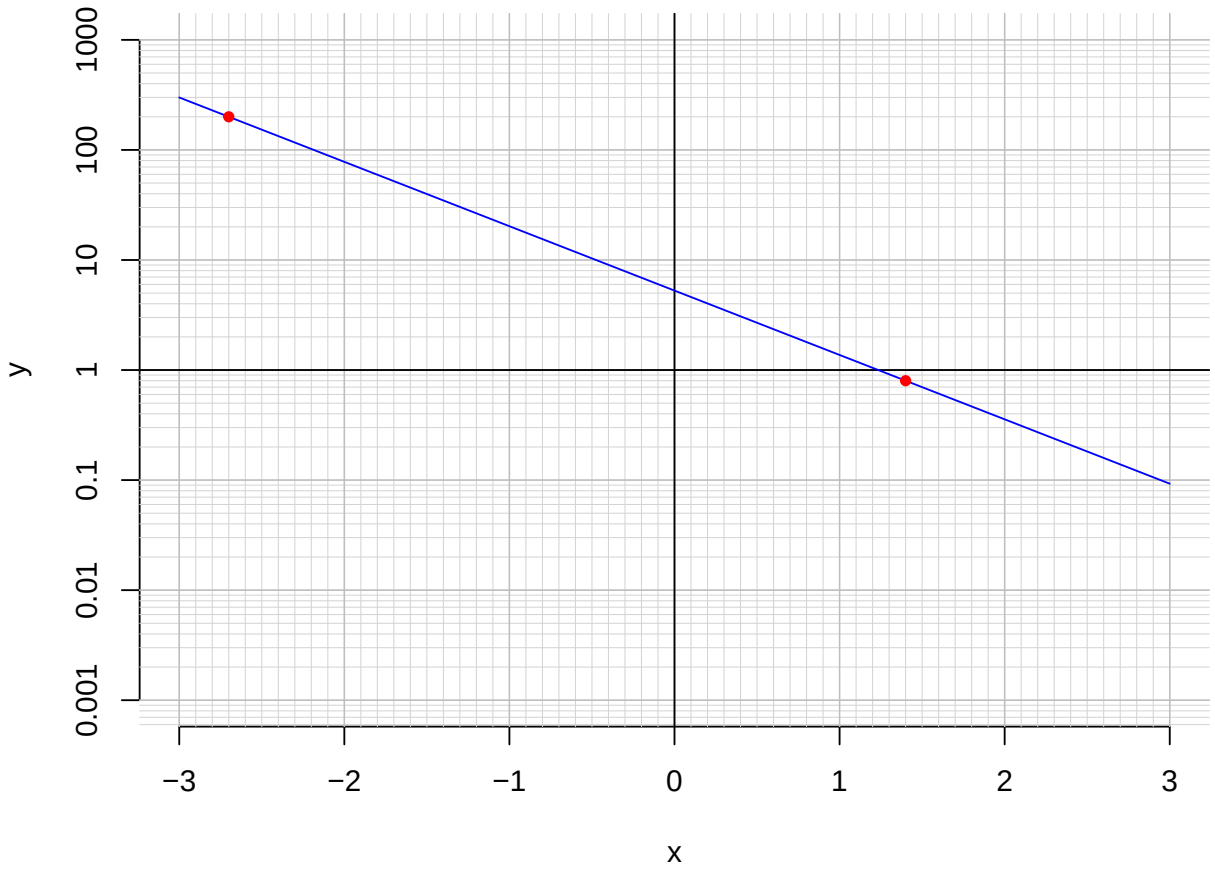
Divide both sides by $\frac{5}{4}$.

$$\frac{4}{5} \cdot \log_2\left(\frac{19 \cdot 7}{3}\right) = t$$

Switch sides.

$$t = \frac{4}{5} \cdot \log_2\left(\frac{19 \cdot 7}{3}\right)$$

3. An exponential function $f(x) = 5.27 \cdot e^{-1.35x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-2.7)$.

$$f(-2.7) = 200$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.35} \cdot \ln\left(\frac{x}{5.27}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.8)$.

$$f^{-1}(0.8) = 1.4$$